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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/937,930	11/30/2001	Yoshio Takahashi	2001-1458A	8810

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EXAMINER	
MISLEH, JUSTIN P	
ART UNIT	**PAPER NUMBER**
2612	

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	09/937,930	TAKAHASHI ET AL.
	Examiner	Art Unit
	Justin P Misleh	2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5,6,16,20,21 and 23* is/are rejected.

7)☒ Claim(s) *2 – 4, 7 – 12, 13 – 15, 17 – 19, 22, and 24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 November 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *See Office Action*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it is divided into two paragraphs. Correction is required. See MPEP § 608.01(b).

Information Disclosure Statement

2. The information disclosure statements filed on 2 October 2001, 30 November 2001, 25 February 2004, and 25 June 2004, have respectively been considered. However, on the information disclosure statement filed on 2 October 2001, the Applicant failed to provide a legible copy and an explanation of relevance for the prior art labeled as AJ on form PTO-1449; and therefore, the Examiner has not considered prior art AJ. See MPEP § 609.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1, 5, 6, 16, 20, 21, and 23** are rejected under 35 U.S.C. 102(b) as being anticipated by Lin et al.

5. For **Claim 1**, Lin et al. disclose, as shown in figures 2 – 4 and as stated in columns 3 (lines 61 – 67), 4 (lines 1 – 17 and 56 – 67), 5 (lines 1 – 27), and 7 (lines 7 – 13), an image input

apparatus (10) having an image reading unit (1) which is constructed by arranging plural chips (3a – 3d) integrally wherein

a stepwise difference in density between image signals which are respectively read by adjacent chips consisting of plural read pixels, which chips have different reading sensitivities, is successively calculated at a time of image reading (see column 4, lines 55 – 64; and column5, lines 33 – 43), and

the image signals which are respectively read by the adjacent chips are compensated (using "correction factor") such that the difference in density between the image signals is compensated (see figures 3 and 4).

6. As for **Claim 5**, Lin et al. disclose, as shown in figure 4 and as stated in c columns 5 (lines 33 – 67), 6, and 7 (lines 1 – 47), the image input apparatus of Claim 1 wherein,

in calculation of the stepwise difference in density between the image signals,

a difference of pixel data on the chip boundary is taken as the stepwise difference in density between the image signals.

Lin et al. takes analyzes the difference between all pixel data during a prereading event and all pixel data during a subsequent reading event so as to apply the corrections factors. All pixel data includes the pixel data on the chip boundary; thus, satisfying the above stated claim limitation concerning "chip boundary".

7. As for **Claim 6**, Lin et al. disclose, as shown in figure 4 and as stated in c columns 5 (lines 33 – 67), 6, and 7 (lines 1 – 47), the image input apparatus of Claim 5 wherein,

in the calculation of the stepwise difference in density between the image signals,

a mean of differences of pixel data on chip boundaries for several lines is taken as the stepwise difference in density between the image signals.

Lin et al. takes analyzes the difference between all pixel data during a prereading event and all pixel data during a subsequent reading event so as to apply the corrections factors. Lin et al. includes correction factors generated by taking average pixel values. Furthermore, all pixel data includes the pixel data on the chip boundary; thus, satisfying the above stated claim limitation concerning "chip boundary".

8. As for **Claim 16**, Lin et al. disclose, as shown in figure 4 and as stated in columns 5 (lines 33 – 67), 6, and 7 (lines 1 – 47), the image input apparatus of Claim 1 comprising:

a density stepwise difference correcting means (data processor 2) for, when the calculated stepwise difference in density is compared to a predetermined threshold value (Uniform White Calibration Strip; Image Color Pattern; and Image Color Calibration Pattern) and the calculated stepwise difference in density is larger than the threshold value (see the matrices in the above identified columns), correcting the calculated stepwise difference in density.

The correction factors are generated and are used for correcting when the chip-to-chip variations are not uniform. As stated in column 7 (lines 7 – 13), if the chip-to-chip variations are uniform, the correction factors are simply an identity matrix.

9. As for **Claim 20**, Lin et al. disclose, as shown in figure 4, the image input apparatus of Claim 1 wherein

the stepwise difference in density between the image signals in reading subsequent to the start of reading is compensated by employing a difference in density between the image signals, which difference is calculated at the start of reading.

As clearly shown in figure 4, steps S110 - S320, correspond to an intermittent prereading step. A first prereading is at step S110 in which first correction factors are generated; a second prereading is at step S220 in which second correction factors are generated; and a third prereading is performed at S320 in which third correction factors are generated. All of the first, second, and third correction factors are applied to the read subsequent image signals.

10. As for **Claim 21**, Lin et al. disclose, as shown in figure 4, the image input apparatus of Claim 1 wherein

prereading for intermittently reading a region (S110; S210; S310) is performed before reading is performed (see column 5, lines 33 – 67; column 6; and column 7, lines 1 – 47), and

the stepwise difference in density between the image signals is compensated by employing the stepwise difference in density, which difference is calculated at the prereading.

As clearly shown in figure 4, steps S110 - S320, correspond to an intermittent prereading step. A first prereading is at step S110 in which first correction factors are generated; a second prereading is at step S220 in which second correction factors are generated; and a third prereading is performed at S320 in which third correction factors are generated. All of the first, second, and third correction factors are applied to the read image signals.

11. As for **Claim 23**, Lin et al. disclose, as stated in column 5 (lines 54- 57), the image input apparatus of Claim 21 wherein

the stepwise difference in density which is calculated by the prereading is stored (in data processor 2), and the stepwise difference in density between the image signals is compensated by employing the stored stepwise difference in density.

Allowable Subject Matter

12. **Claims 2 – 4, 7 – 12, 13 – 15, 17 – 19, 22, and 24** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The closest prior art (Lin et al.) teach a method for calibrating a multi-chip image sensor, and an imaging system having a multi-chip sensor that includes color correction factors generated by such a method. The image sensor is successively controlled to image three different test targets. After imaging each target, a set of correction factors is generated and used to correct image signals generated when imaging the next test target. A first set of correction factors corrects for pixel-to-pixel variations between imaging elements in the array. The second set of correction factors corrects for chip-to-chip variations between chips in the array. The third set of correction factors corrects for array-wide variations compared to a standard color chart.

However, the closest prior art does not teach or fairly suggest:

having a gamma compensation value only for one chip among the plural chips as a reference, and compensating the image signals for the chip as the reference and other chips by employing the gamma compensation value;

calculating the compensation values where the mean of the differences of the pixel data on the chip boundaries for several lines is calculated and the difference exceeds a threshold value, wherein the difference value is excluded from the calculation of the mean;

calculating the compensation values where the calculation of the stepwise difference in density between the image signals is started after being delayed from a real reading start by the

number of lines which are required for calculating the mean value of the stepwise differences in density between the image signals;

a density stepwise difference correcting means for not correcting the calculated stepwise difference in density when the calculated stepwise difference exceeds a predetermined threshold;

wherein the stepwise difference in density is calculated from a mean of a plurality of pre-reading signals and applying compensation values to an intermittent region which is not to be read;

when real-time screen display of an input image is performed, the screen display is performed from a line which has been subjected to the addition of the stepwise difference in density between the chips.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following is brief description of the prior art of record as labeled on attached form PTO-892.

- **Prior Art B** discloses, in the very least, an image reading apparatus that includes a plurality of linear sensors for reading an image of a document. Each linear sensor reads a different portion of a line of the document in a divided manner. A plurality of clamp circuits control black levels of signals generated by the plurality of linear sensors to be a black reference level.

- **Prior Art C** discloses, in the very least, an image reading apparatus compensates inter-deviations of and a change in a color temperature of a light source while compensating a

difference in the sensitivities between linear image sensors and a change in the sensitivity difference. Three linear image sensors for R, G and B of a multi-line linear image sensor read white reference image data, and a line memory stores the image data.

- **Prior Art D**, discloses, in the very least, an image reading apparatus such as a color copying apparatus has a plurality of sensing CCD chips for converting an image of an object into an electrical signal, each sensing CCD chip having a plurality of sensing elements. The apparatus has an adjusting circuit for compensating for fluctuation characteristics of the sensing elements of the sensing chips, by making use of the digital data converted by the converting circuit, wherein the second adjusting circuit compensates on the basis of electrical signals which are produced as a result of conversion by the sensing chips from two objects having different levels of density from each other, such as white and black levels.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Justin P Misleh whose telephone number is 703.305.8090. The Examiner can normally be reached on Monday through Thursday from 7:30 AM to 5:30 PM and on alternating Fridays from 7:30 AM to 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Wendy R Garber can be reached on 703.305.4929. The fax phone number for the organization where this application or proceeding is assigned is 703.872.9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JPM
October 18, 2004

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